**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BOARD OF PATENT APPEALS AND INTERFERENCES**

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| In re Application of: | Confirmation No.: 2530 |
| Nair et al. | Group Art Unit: 2423 |
| Serial No.: 10/663,037 | Examiner: Mendoza, Junior O. |
| Filed: September 15, 2003 | Docket No.: 60374.0007US01/CPOL 968414 |

For: RESOURCE-ADAPTIVE MANAGEMENT OF VIDEO STORAGE

## APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from the final Office Action dated November 24, 2009 (Paper No./Mail Date 20091030), which rejected claims 1, 2, 5, 7-9, 12, 17-19, 21-25, 41-47, and 51-68 in the present application. Appellants have filed a Notice of Appeal on March 25, 2010 with an appropriate petition for extension of time, and an amendment to the claims under 37 C.F.R. §41.33(a) on March 31, 2010 to place the claims in a better condition for appeal. An Advisory Action dated April 7, 2010, acknowledges these amendments, and indicates in Section 7 that the amendments will be entered. The present Appeal Brief is responsive to the filed Notice of Appeal and the aforementioned Advisory Action.

## I.     REAL PARTY IN INTEREST

The real party in interest of the instant application is Scientific-Atlanta, Inc., having its principal place of business at 5030 Sugarloaf Parkway, Lawrenceville, GA 30044. Scientific-Atlanta, Inc., the assignee of record, is wholly owned by Cisco Systems, Inc.

## II.     RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

## III.     STATUS OF THE CLAIMS

Claims 1, 2, 5, 7-9, 12, 17-19, 21-25, 41-47, and 51-68 stand finally rejected by the final Office Action mailed November 24, 2009, and are the subject of this appeal. Claims 3-4, 6, 10-11, 13-16, 20, 26-40, and 48-50 were cancelled during prosecution.

## IV.     STATUS OF AMENDMENTS

There have been claim amendments submitted under 37 C.F.R. §41.33(a) on March 31, 2010 and hence after the final Office Action, and all amendments made before and after the final Office Action have been entered. The claim listing in section VIII (CLAIMS – APPENDIX, below) represents the present state of the claims.

## V.     SUMMARY OF THE CLAIMED SUBJECT MATTER

Embodiments of the claimed subject matter are summarized below with reference numbers and references to the written description ("specification") and drawings. The subject matter described below appears in the original disclosure at least where indicated, and may further appear in other places within the original disclosure.

Embodiments of the claimed subject matter, such as those defined by independent claim 1, define a method comprising the steps of: receiving plural video streams corresponding to a first format and a second format different than the first format (see, e.g., page 5, lines 3-9; page 8, lines 20-33); encoding in parallel plural digitized pictures of a first picture sequence corresponding to a first video stream of the plural received video streams and a second picture sequence corresponding to a second video stream of the plural received video streams to produce a transport stream comprising a multiplex of a corresponding first compressed video stream and a second compressed video stream, respectively, the first and second video streams having the first format and the first and second compressed video streams having the second format (see, e.g., page 6, lines 4-22; page 7, lines 25-34; page 8, lines 20-33; page 15, lines 26-29); storing the transport stream in a storage device (see, e.g., FIG. 2, reference numeral 263; and page 6, lines 4-34; page 8, lines 20-33); determining whether the encoded pictures of the first and second compressed video streams are to be transcoded according to a first operating mode or a second operating mode relative to producing the video stream, the determination based on availability of processing resources, wherein the first operating mode is implemented in non-real time and the second operating mode is implemented in real-time (see, e.g., page 8, lines 1-13; page 16, lines 15-31); and transcoding at least a portion of the first compressed video stream or the second compressed video stream according to either the first operating mode or the second operating mode responsive to a determination regarding the sufficiency of processing resources (see, e.g., page 8, lines 1-13; page 16, lines 15-31).

Embodiments of the claimed subject matter, such as those defined by dependent claim 2, further define the method of claim 1, wherein the method is implemented by a television set-top terminal (see, e.g., FIG. 2, reference numeral 200; page 2, lines 9-10 and 25-26; page 7, line 25 – page 8, line 28).

Embodiments of the claimed subject matter, such as those defined by dependent claim 5, further define the method of claim 1 by further comprising the steps of: accessing pre-calculated resource estimates corresponding to compressing, decompressing, or a combination of both tasks pertaining to transcoding operations corresponding to the stored video stream, the pre-calculated resource estimates based on worst case conditions for one or more factors, wherein the transcoding according to the first operating mode is in non-real time and the transcoding according to the second operating mode is in real time, the determination of which mode to execute further based on the availability of resources as determined with respect to the pre-calculated resources (see, e.g., page 19, lines 18-23; page 20, lines 1-11).

Embodiments of the claimed subject matter, such as those defined by dependent claim 7, further define the method of claims 1 and 5, wherein the one or more factors includes one or more of video compression specification, picture size, picture rate, or time factor (see, e.g., page 23, lines 1-33).

Embodiments of the claimed subject matter, such as those defined by dependent claim 8, further define the method of claims 1, 5, and 7, wherein the time factor provides a plurality of completion times for non-real time operations (see, e.g., page 19, lines 18-23).

Embodiments of the claimed subject matter, such as those defined by dependent claim 9, further define the method of claim 1, wherein the transcoding according to the first operating mode is implemented according to a second video specification different than the first video specification (see, e.g., FIG. 3B; and page 17, lines 9-24).

Embodiments of the claimed subject matter, such as those defined by dependent claim 12, further define the method of claim 1, wherein the processing resources comprise one or more of an instruction execution resource, bus bandwidth, memory capacity, storage capacity, or access to storage capacity (see, e.g., page 16, lines 16-17; page 22, line 15; page 23, lines 11-19).

Embodiments of the claimed subject matter, such as those defined by dependent claim 17, further define the method of claim 1, wherein the transcoding according to the second operating mode is according to the first video specification (see, e.g., FIGs. 3C and 3D; and page 20, lines 12-34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 18, further define the method of claim 1, wherein the first operating mode corresponds to a first bit rate and the second operating mode corresponds to a second bit rate different than the first bit rate (see, e.g., FIG. 5, reference numerals 501 and 505; and page 21, lines 24-34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 19, further define the method of claim 1, by further comprising the step of: monitoring consumption of the processing resources over an extended time period for different time intervals for respective operations that are currently executing and scheduled to be executed at a future time (see, e.g., page 20, lines 1-11).

Embodiments of the claimed subject matter, such as those defined by dependent claim 21, further define the method of claims 1 and 19, by further comprising the step of monitoring consumption of the processing resources comprises monitoring user input (see, e.g., page 23, line 19).

Embodiments of the claimed subject matter, such as those defined by dependent claim 22, further define the method of claim 1, wherein the determination is further based on one or more characteristics of the video stream (see, e.g., page 22, lines 11-13).

Embodiments of the claimed subject matter, such as those defined by independent claim 23, define a set-top terminal (STT) (see, e.g., FIG. 2, reference numeral 200; page 3, line 19 – page 12, line 21) comprising: an encoder (see, e.g., FIG. 2, reference numeral 217; and page 6, lines 14-22) configured to compress plural digitized pictures of a picture sequence according to a first video compression specification to produce a video stream (see, e.g., page 5, line 3 – page 6, line 22; page 7, lines 25-34); determine logic (see, e.g., FIG. 2, reference

numeral 268; and page 20, lines 1-11; page 24, lines 15-20; page 25, lines 2-4) configured to determine whether the video stream is to be transcoded according to a first operating mode or a second operating mode relative to producing the video stream, the determination based on availability of processing resources (see, e.g., page 8, lines 1-13; page 16, lines 15-31); and transcode logic (see, e.g., FIG. 3A, reference numerals 223 and 217; and page 15, lines 3-8; page 16, lines 15-31; page 24, lines 15-20; page 25, lines 2-4) configured to transcode the video stream according to either the first operating mode or the second operating mode responsive to a determination regarding the sufficiency of processing resources (see, e.g., page 8, lines 1-13; page 16, lines 15-31).

Embodiments of the claimed subject matter, such as those defined by dependent claim 24, further define the STT of claim 23, wherein the first operating mode corresponds to a higher compression rate than the second operating mode (see, e.g., page 16, lines 4-31).

Embodiments of the claimed subject matter, such as those defined by dependent claim 25, further define the STT of claim 23, wherein the second operating mode corresponds to an MPEG-2 video compression specification and the first operating mode corresponds to an H.264 video compression specification (see, e.g., FIG. 3B; and page 17, lines 9-24).

Embodiments of the claimed subject matter, such as those defined by dependent claim 41, further define the STT of claim 23, wherein the STT is integrated in a subscriber television system (see, e.g., FIG. 1, reference numerals 100 and 200; page 2, line 33 – page 3, line 18).

Embodiments of the claimed subject matter, such as those defined by dependent claim 42, further define the STT of claim 23, wherein the first operating mode is implemented in non-real time and the second operating mode is implemented in real-time (see, e.g., page 8, lines 1-13).

Embodiments of the claimed subject matter, such as those defined by dependent claim 43, further define the STT of claim 23, wherein the determine logic is further configured to: access pre-calculated resource estimates corresponding to compressing, decompressing, or a combination of both tasks pertaining to transcoding operations corresponding to the stored video stream, the pre-calculated resource estimates based on worst case conditions for one or more factors, wherein the transcode logic is further configured to transcode according to the first operating mode in non-real time and according to the second operating mode in real time, the determination of which operating mode to execute further based on the availability of resources as determined with respect to the pre-calculated resources (see, e.g., page 19, lines 18-23; page 20, lines 1-11).

Embodiments of the claimed subject matter, such as those defined by dependent claim 44, further define the STT of claims 23 and 43, wherein the one or more factors includes one or more of video compression specification, picture size, picture rate, or time factor (see, e.g., page 23, lines 1-33).

Embodiments of the claimed subject matter, such as those defined by dependent claim 45, further define the STT of claims 23, 44, and 44, wherein the time factor provides a plurality of completion times for non-real time operations (see, e.g., page 19, lines 18-23).

Embodiments of the claimed subject matter, such as those defined by dependent claim 46, further define the STT of claim 23, wherein the transcode logic is further configured to transcode according to the first operating mode implemented according to a second video specification different than the first video specification (see, e.g., FIG. 3B; and page 17, lines 9-24).

Embodiments of the claimed subject matter, such as those defined by dependent claim 47, further define the STT of claim 23, wherein the processing resources comprise one or more of an instruction execution resource, bus bandwidth, memory capacity, storage capacity,

or access to storage capacity (see, e.g., page 16, lines 16-17; page 22, line 15; page 23, lines 11-19).

Embodiments of the claimed subject matter, such as those defined by dependent claim 51, further define the STT of claim 23, wherein the second operating mode is according to the first video specification (see, e.g., FIGs. 3C and 3D; and page 20, lines 12-34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 52, further define the STT of claim 23, wherein the first operating mode corresponds to a first bit rate and the second operating mode corresponds to a second bit rate different than the first bit rate (see, e.g., FIG. 5, reference numerals 501 and 505; and page 21, lines 24-34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 53, further define the STT of claim 23, wherein the determine logic is further configured to: monitor consumption of the processing resources over an extended time period for different time intervals for respective operations that are currently executing and scheduled to be executed at a future time (see, e.g., page 20, lines 1-11).

Embodiments of the claimed subject matter, such as those defined by dependent claim 54, further define the STT of claims 23 and 53, wherein the monitoring comprises monitoring user input (see, e.g., page 23, line 19).

Embodiments of the claimed subject matter, such as those defined by dependent claim 55, further define the STT of claim 23, wherein the determination is further based on one or more characteristics of the video stream (see, e.g., page 22, lines 11-13).

Embodiments of the claimed subject matter, such as those defined by dependent claim 56, further define the method of claim 1, wherein transcoding comprises accessing in parallel the first and second compressed video streams, decompressing in parallel the encoded pictures of the first and second compressed video streams, and compressing the first compressed video stream according to the second format at a reduced bit rate and compressing

the second compressed video stream according to a third format different than the first and second formats (see, e.g., page 18, lines 1-14; page 20, lines 12-26).

Embodiments of the claimed subject matter, such as those defined by dependent claim 57, further define the method of claims 1 and 56, wherein the first format corresponds to analog video, and the second and third formats correspond to different video compression specifications (see, e.g., page 4, lines 13-28; page 5, line 3 – page 6, line 34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 58, further define the method of claim 1, wherein transcoding comprises accessing the portion of the first compressed video stream, decompressing the portion, and compressing the decompressed portion according to a third format different than the first and second formats, and storing the transcoded portion having the third format in the storage device (see, e.g., page 4, lines 13-28; page 5, line 3 – page 6, line 34; page 7, lines 25-34; page 12, line 22 – page 13, line 3; page 19, lines 1-33; page 21, lines 6-23).

Embodiments of the claimed subject matter, such as those defined by dependent claim 59, further define the method of claims 1 and 58, by further comprising accessing and decompressing the transcoded portion and non-transcoded portions of the first compressed video stream and presenting as decompressed pictures for display (see, e.g., page 12, line 22 – page 15, line 2).

Embodiments of the claimed subject matter, such as those defined by dependent claim 60, further define the method of claims 1 and 58, wherein the first format corresponds to analog video, and the second and third formats correspond to different video compression specifications (see, e.g., page 4, lines 13-28; page 5, line 3 – page 6, line 34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 61, further define the method of claim 1, wherein encoding further comprising encoding audio corresponding respectively to the first and second video streams and multiplexing the encoded audio in the transport stream (see, e.g., page 5, lines 10-18).

Embodiments of the claimed subject matter, such as those defined by dependent claim 62, further define the STT of claim 23, by further comprising a multiplexer, wherein the encoder is further configured to: receive, in parallel to the plural digitized pictures, second plural digitized pictures of a second picture sequence and compressed pictures, the received pictures corresponding to a first format (see, e.g., page 5, lines 3-9; page 8, lines 20-33); and further compress, in parallel to the plural digitized pictures of the picture sequence, the second plural digitized pictures of the second picture sequence to produce, in association with the multiplexer, a transport stream comprising a multiplex of the video stream and the compressed second plural digitized pictures, the transport stream pictures corresponding to a second format different than the first (see, e.g., page 6, lines 4-22; page 7, lines 25-34; page 8, lines 20-33; page 15, lines 26-29).

Embodiments of the claimed subject matter, such as those defined by dependent claim 63, further define the STT of claims 23 and 62, wherein the transcode logic is further configured to access in parallel the video streams of the transport stream, decompress in parallel the compressed plural digitized pictures of the video stream and the compressed second plural digitized pictures, and compress the decompressed pictures of the video stream according to the second format at a reduced bit rate and compress the decompressed second plural digitized pictures according to a third format different than the first and second formats (see, e.g., page 18, lines 1-14; page 20, lines 12-26).

Embodiments of the claimed subject matter, such as those defined by dependent claim 64, further define the STT of claims 23, 62, and 63, wherein the first format corresponds to analog video, and the second and third formats correspond to different video compression specifications (see, e.g., page 4, lines 13-28; page 5, line 3 – page 6, line 34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 65, further define the STT of claims 23 and 62, wherein the transcode logic is further

configured to access a portion of the video stream, decompress the portion, compress the decompressed portion according to a fourth format different than the first and second formats, and store the transcoded portion having the fourth format in a storage device, the transcoded portion comprising the compressed, decompressed portion (see, e.g., page 4, lines 13-28; page 5, line 3 – page 6, line 34; page 7, lines 25-34; page 12, line 22 – page 13, line 3; page 19, lines 1-33; page 21, lines 6-23).

Embodiments of the claimed subject matter, such as those defined by dependent claim 66, further define the STT of claims 23, 62, and 65, further comprising accessing and decompressing the transcoded portion and non-transcoded portions of the video stream and present as decompressed pictures for display (see, e.g., page 12, line 22 – page 15, line 2).

Embodiments of the claimed subject matter, such as those defined by dependent claim 67, further define the STT of claims 23, 62, and 65, wherein the first format corresponds to analog video, and the second and fourth formats correspond to different video compression specifications (see, e.g., page 4, lines 13-28; page 5, line 3 – page 6, line 34).

Embodiments of the claimed subject matter, such as those defined by dependent claim 68, further define the STT of claims 23 and 62, wherein the encoder is further configured to compress audio corresponding respectively to the video streams of the transport stream, and wherein the multiplexer is configured to multiplex the compressed audio in the transport stream (see, e.g., page 5, lines 10-18).

## VI.    GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are to be reviewed on appeal.

A.      Claim 1 stands rejected under 35 U.S.C. § 101 as allegedly failing to fall within one of the statutory categories of invention.

B.      Claims 1, 2, 5, 7, and 12 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Artigalas et al.* ("*Artigalas*," U.S. Patent Publication No. 2001/0014206) in view of

*O'Donnel* (U.S. Patent Publication No. 20020071663) further in view of *Delpuch* (U.S. Patent Publication No. 2004/0055020).

      C.     Claims 8, 19, and 21 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Artigalas* in view of *O'Donnel* in view of *Delpuch* further in view of *Kaneko et al.* ("*Kaneko*," U.S. Patent No. 6,671,454).

      D.     Claims 9, 17, 18, and 56-60 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Artigalas* in view of *O'Donnel* in view of *Delpuch* further in view of *Masukura et al.* ("*Masukura*," U.S. Patent Publication No. 2003/0001964).

      E.     Claim 22 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Artigalas* in view of *O'Donnel* in view of *Delpuch* further in view of *Kaars* (U.S. Patent Publication No. 2003/0066084).

      F.     Claim 23, 24, 41-44, and 47 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *O'Donnel* in view of *Delpuch*.

      G.     Claims 25, 46, 51, 52, and 63-67 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *O'Donnel* in view of *Delpuch* further in view of *Masukura*.

      H.     Claims 45, 53, and 54 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *O'Donnel* in view of *Delpuch* further in view of *Kaneko*.

      I.     Claim 55 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *O'Donnel* in view of *Delpuch* further in view of *Kaars*.

      J.     Claim 61 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Artigalas* in view of *O'Donnel* in view of *Delpuch* further in view of *Zimmerman* (U.S. Patent Publication No. 2003/0147631).

      K.     Claim 62 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *O'Donnel* in view of *Delpuch* further in view of *Artigalas*.

      L.     Claim 68 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *O'Donnel* in view of *Delpuch* further in view of *Zimmerman*.

## VII.    ARGUMENT

### A.    Claim 1 - 35 U.S.C. § 101

The final Office Action (page 7) rejects clam 1 under 35 U.S.C. §101 for allegedly not falling within one of the four statutory categories, and further states that a statutory process under 35 U.S.C. §101 must (1) be tied to a particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. Appellants note that claim 1 falls within a statutory category (process) and is indeed compliant to (2) above for at least the reason that the operations of claim 1 reflect state changes. For instance, there is an encoding of plural digitized pictures and multiplexing of the encoded pictures into a transport stream, differing in formats as noted by the claims. In other words, in one embodiment, the received pictures are not in a compressed state, but rather, merely digitized. When outputted in response to the encoding operation, they are in a compressed state, which represents a different state than the received signal. Different states are within the meaning of a statutory process, and hence the 35 U.S.C. §101 rejection should be overturned for at least this reason.

Further, transformations in state are reflected by the claimed change in format and changes in bit rate (e.g., by virtue of a transcoding operation). For at least these additional reasons, Appellants respectfully submit that the process embodied by claim 1 represents a statutory process and comprises a transformation in state, and hence the 35 U.S.C. §101 rejection should be overturned.

### B.    Claims 1, 2, 5, 7, and 12 - 35 U.S.C. § 103(a) - *Artigalas, O'Donnel, Delpuch.*

The following rule of law is applicable to all 35 U.S.C. § 103(a) rejections in the sections below. The U.S. Patent and Trademark Office ("USPTO") has the burden under section 103 to establish a *prima facie* case of obviousness according to the factual inquiries expressed in

*Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). The four factual inquires, also expressed in MPEP 2100-116, are as follows:

(A)     Determining the scope and contents of the prior art;

(B)     Ascertaining the differences between the prior art and the claims in issue;

(C)     Resolving the level of ordinary skill in the pertinent art; and

(D)     Evaluating evidence of secondary considerations.

Appellants respectfully submit that a *prima facie* case of obviousness is not established using the art of record.

1.     Independent Claim 1 and dependent claims 2, 5, 7, and 12

Claim 1 recites (with emphasis added):

1.      A method comprising the steps of:
receiving plural video streams corresponding to a first format and a second format different than the first format;
***encoding in parallel plural digitized pictures of a first picture sequence corresponding to a first video stream of the plural received video streams and a second picture sequence corresponding to a second video stream of the plural received video streams to produce a transport stream comprising a multiplex of a corresponding first compressed video stream and a second compressed video stream, respectively, the first and second video streams having the first format and the first and second compressed video streams having the second format;***
storing the transport stream in a storage device;
***determining whether the encoded pictures of the first and second compressed video streams are to be transcoded according to a first operating mode or a second operating mode relative to producing the video stream, the determination based on availability of processing resources, wherein the first operating mode is implemented in non-real time and the second operating mode is implemented in real-time***; and
***transcoding at least a portion of the first compressed video stream or the second compressed video stream according to either the first operating mode or the second operating mode*** responsive to a determination regarding the sufficiency of processing resources.

Appellants respectfully submit that *Artigalas* in view of *O'Donnel* and further in view of *Delpuch* fails to disclose, teach, or suggest at least the above-emphasized features of claim 1. For

instance, the final Office (page 10) alleges in part the following with regard to *Artigalas* (emphasis in original):

> Regarding **claim 1**, Artigalas discloses…encoding (encoders 3) in parallel plural digitized pictures of a first picture sequence…(Paragraph [0040] and figure 1; multiple analog tuners to receive and record multiple channels in parallel)…

Appellants respectfully disagree. Paragraph [0040] of *Artigalas* provides as follows (emphasis added):

> [0040] The device of the invention can be incorporated in a television decoder or in a television receiver. As shown in FIG. 1, the device of the invention includes <u>means of frequency selection 1 able to provide signals from one or more channels in parallel</u>, the channels being picked up by an antenna 2 in the case of an air or satellite broadcast or received via a cable network Said means of frequency selection 1 can includes one or more analog and/or digital 'tuners', in order <u>to provide several channels of programs in parallel</u>. The signals output by said means of frequency selection I are processed by means of digital encoding 3 which convert, if need be, the analog signals into digital signals and possibly assure the digital compression and/or multiplexing of the received signals. The encoded digital signals are then fed to the means of recording and reading 4 to be recorded on a large-capacity recording medium 4a. Means of control 5 along with a user interface module 6 (in the form of buttons integrated in the device or a remote controller) enable the user to control the means of frequency selection 1 and the means of recording and reading 4.

Assuming *arguendo* <u>parallel</u> signal provision to the means of digital encoding 3 of Figure 1 of *Artigalas*, that does not necessarily mean <u>parallel encoding</u>. For instance, one having ordinary skill in the art should understand that buffers may be utilized to stagger processing times and hence provide sequential encoding. There is no evidence presented in *Artigalas* that the <u>encoding</u> is implemented in <u>parallel</u>. For at least this reason, and to the extent *Artigalas* is relied upon for these claimed features, Appellants respectfully request that the rejection be overturned and claim 1 allowed.

In addition, the final Office Action (page 10) alleges that *Artigalas* discloses a ***transport stream***, and refers to Figure 1, paragraph [0040] and further alleges "multiple analog tuners to receive and record multiple channels in parallel." Appellants respectfully disagree. A transport stream has a well-understood meaning in the video transmission industry, and comprises a

specific, standardized packet structure (e.g., see MPEG-2). Neither paragraph [0040] of *Artigalas* nor Figure 1 describes a **transport stream** consistent with Appellants' specification as filed or as recognized in the industry. For this additional reason, Appellants respectfully request that the rejection be overturned and claim 1 allowed.

Additionally, though the final Office Action acknowledges (page 10) certain deficiencies of *Artigalas*, the final Office Action alleges (page 11) the following in part with regard to *O'Donnel*:

> Nevertheless, in a similar field of endeavor O'Donnel discloses a method comprising the steps of: determining whether the encoded pictures of the compressed video streams are video stream is to be transcoded according to a first operating mode or a second operating mode relative to producing the video stream, the determination based on availability of processing resources (Paragraphs [0018] [0019] and [0021] also exhibited on figures 2, 3 and 6; received video stream gets fast compressed in real-time or high compress in non-real time when receiver is "offline" based on system resources)...[sic]

Appellants respectfully disagree. Figures 2, 3, and 6 of *O'Donnel* do not show **determining whether the <u>encoded</u> pictures of the first and second compressed video streams are to be <u>transcoded</u>**. The above cited paragraphs of *O'Donnel* are reproduced below (emphasis added):

> [0018] Shown by way of example in FIG. 1 is a CVA 2, which may consist of a stand-alone television set-top box, or as a component that is physically integrated into a multifunction television receiver. Typically, the CVA 2 includes: an RF (VHF/UHF/cable) tuner; baseband NTSC/PAL audio/video inputs; microprocessor controlled circuits which provide on-screen displays and a user interface to control the operation of the system; a remote control which enables the user to select programs or classes of programs for automatic recording; an EIDE HDD 4 which stores compressed, digitized audio and video streams; <u>a compression processor which carries out real-time video compression</u>; and video outputs for driving a display device 6. In a conventional record operation, as shown in FIG. 2, the CVA 2 <u>receives an analog video stream in real time (step 8), compresses the video stream</u> using a real-time compression algorithm (step 10), and records the compressed video stream on the HDD (step 12). By "real-time video compression", I mean that the compression processor accepts analog audio and video inputs, and creates a stream of digital data of varying data rate which is then reduced in bandwidth from the pure digitized audio/video. As I have explained above, implementations found in the art today are based on either MPEG technology or wavelet video compression, and provide acceptable video quality using digital data rates ranging from 6 megabits (six million bits per second) to 2 megabits. During a conventional video playback operation, as shown in FIG. 3, the <u>CVA 2 reads the compressed video stream from the HDD 4</u>

(step 14), decompresses the compressed video stream back into baseband audio and video (step 16), and presents the reproduced analog video stream at its video outputs for display on the display device 6 (step 18). Recording and playback can occur either sequentially or simultaneously. For convenience of reference, I will use the term on-line to refer to the status of the CVA 2 when it is performing either a record or playback operation; in contrast, whenever the CVA 2 is not on-line, it is, by definition, off-line.

[0019] In accordance with my invention, whenever the CVA 2 performs a live-capture using in a convention record operation (FIG. 2), it will store a process record in a event database on the HDD 4. As shown in FIG. 4, when the CVA 2 is off-line (step 20), the CVA 2 will examine the database for a new process record. If it finds a new process record (step 22), the CVA 2 will read the respective compressed video stream (step 24), and then perform processing on the compressed video stream which was not economically or technically feasible to apply during live capture (step 26). For example, as shown in FIG. 5, the CVA 2 may enhance the video stream in any of a number of ways, including noise reduction, image enhancement, and picture resizing (step 28). Alternatively, as shown in FIG. 6, the CVA 2 may re-compress the video stream, using another high compression algorithm which may result in lower bitrate (step 30). Of course, if sufficient off-line time is available, the CVA 2 may perform both enhancement and recompression. When the desired off-line processing has been accomplished, the CVA 2 will record the processed, compressed video stream (step 32), and then update the respective process record to indicate which process(es) have been performed on the corresponding video stream so that the appropriate decompression algorithm can be applied during playback (see, step 16).

[0021] When the CVA 2 again resumes on-line operation--either because of user input or automatic initiation--the CVA 2 makes a record of it's status and then suspends off-line processing. During the next off-line period, the CVA 2 may either resume the suspended process or initiate a new process. This latter course of action would be appropriate if, for example, during the interim on-line period, the user had discarded the particular video stream upon which the suspended operation was being performed. Thus, off-line processing does not interfere with either recording or playback, and does not raise the peak throughput needed in the system, but rather consumes system resources only when the CVA 2 would otherwise be idle.

It is clear from the cited sections noted above, and particularly the underlined sections, that only one local transcode operation is disclosed (e.g., read the recorded compressed stream, re-compress, and then store again until playback is requested). Assuming *arguendo* an off-line process to be one type of operating mode, based on these cited sections, it cannot be accurately alleged that *O'Donnel* discloses or suggests *determining whether the <u>encoded pictures</u> of the first and second <u>compressed</u> video streams are to be <u>transcoded</u> according to a <u>first</u>*

*operating mode <u>or</u> a <u>second</u> operating mode*, nor is there support for *transcoding at least a portion of the first compressed video stream or the second compressed video stream according to either the first operating mode or the second operating mode*. For at least this additional reason, and to the extent *O'Donnel* is relied upon for these claimed features, Appellants respectfully request that the rejection be overturned and claim 1 allowed.

Further, the final Office Action (page 12) alleges the following rationale for combining *Artigalas* and *O'Donnel*:

> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Artigalas by specifically providing the elements mentioned above, as taught by O'Donnel, for the purpose of implementing a transcoding algorithm which allows the further compression of content in a recording device (O'Donnel – paragraph [0009]).

Appellants respectfully disagree. One standard for determining obviousness is reproduced below:

> In *KSR*, the Supreme Court particularly emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," *Id.* at ___, 82 USPQ2d at 1395, and discussed circumstances in which a patent might be determined to be obvious. Importantly, the Supreme Court reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at ___, 82 USPQ2d at 1395. The Supreme Court stated that there are "[t]hree cases decided after *Graham* [that] illustrate this doctrine." Id. at ___, 82 USPQ2d at 1395. (1) "In *United States v. Adams*, . . . [t]he Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." Id. at ___, 82 USPQ2d at 1395. (2) "In *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, . . . [t]he two [pre-existing elements] in combination did no more than they would in separate, sequential operation." *Id.* at ___, 82 USPQ2d at 1395. (3) "[I]n *Sakraida v. AG Pro, Inc.*, the Court derived . . . the conclusion that when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious." Id. at ___, 82 USPQ2d at 1395-96 (Internal quotations omitted.). The principles underlining these cases are instructive when the question is whether a patent application claiming the combination of elements of prior art would have been obvious.

Appellants respectfully submit that the combination as proposed by the final Office Action (page 12) does <u>not yield predictable results</u>. For instance, *Artigalas* describes magnetic tape recording

methods (see, e.., paragraph [0035]) and digital video cassettes [paragraph [0036]) as possible mechanisms for recording at local client devices. There is no evidence that transcoding algorithms can even be applied to such technologies. Further, the final Office Action omits any mention and supporting rationale of whether there is predictability in result.

Further, the addition of transcoding to the system of *Artigalas* fundamentally alters the principle of operation of *Artigalas* (e.g., from non-transcoding to transcoding), which is evidence of non-obviousness as set forth below:

> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

Hence, Appellants respectfully submit that the combination is not obvious, and respectfully request that the rejection be overturned for these additional reasons.

Because independent claim 1 is allowable over *Artigalas* in view of *O'Donnel* and further in view of *Delpuch*, dependent claims 2, 5, 7, and 12 are allowable as a matter of law for at least the reason that the dependent claims 2, 5, 7, and 12 contain all elements of their respective base claim. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Hence, Appellants respectfully request that the rejection of claims 2, 5, 7, and 12 be overturned.


2.    Dependent claim 5

Appellants respectfully submit that *Artigalas* in view of *O'Donnel* and further in view of *Delpuch* fails to disclose, teach, or suggest at least "***accessing pre-calculated resource estimates*** corresponding to compressing, decompressing, or a combination of both tasks pertaining to ***transcoding operations*** corresponding to the ***stored*** video stream, the pre-calculated resource estimates based on worst case conditions for one or more factors," as recited in claim 5. The final Office Action (page 14) refers to paragraphs [0035] and [0037] and

figure 6 of *Delpuch* for alleged teaching of these features, those paragraphs of *Delpuch*

reproduced below (emphasis added):

> [0035] Turning now to FIG. 6, one embodiment of a method corresponding to the above description is provided. Generally speaking, the processes described in FIG. 6 may occur within a viewer's STB, PVR, or related recording device. In response to detecting an indication to record a particular television program or other data (decision block 602), <u>a determination may be made as to the amount of storage required to accommodate storage of the program</u> (block 604). It is noted that detection (block 602) of an indication to record a program may be in response to an explicit request received from a viewer, a pre-programmed request to record shows of a given type, or an automatic indication that may occur in response to detecting a program the viewer may wish to record based on the viewer's viewing habits, demographics, etc.

> [0037] <u>Subsequent to determining the storage requirements (block 604), a determination may be made (decision block 606) as to a particular data reduction factor DRF (i.e., level of compression) desired. Such an indication may be made explicitly by the viewer (e.g., quality level highest, compression level greatest, etc.) or could by automatically determined based on factors such as the amount of storage space available, the type of program indicated, or otherwise.</u> Alternatively, a default compression level may be utilized if no DRF indication is detected (decision block 606). Subsequent to determining the desired level of compression and corresponding storage space required, a determination is made (decision block 608) as to whether there is sufficient storage space available for the proposed recording. If there is sufficient space (decision block 608), then the program may be subsequently compressed (block 612) using the desired DRF and stored (block 614). It is noted that the desired compression which is indicated may be no compression, in which case compression processing at block 612 is simply bypassed.

Appellants respectfully submit that none of these sections disclose ***accessing pre-calculated***

***resource estimates***, and in particular, certainly not for compressing, decompressing, or a

combination of both pertaining to ***transcoding operations*** for worst case conditions for the

***stored*** video stream. The final Office Action (page 2) further alleges in part the following (italics

in original):

> *However, the examiner respectfully disagrees with the applicant. Delpuch clearly discloses determining the amount of storage available and the amount of storage required to transcode a video content to its highest quality; paragraphs [0035] [0037] figure 6. More specifically, paragraph [0037] teaches that the level of compression can be automatically determined based on predetermined factors such as the amount of storage available; where the amount of storage available can reasonably be interpreted as a resource estimate. Moreover, it is clear that*

*the storage available calculation is done prior to the transcoding step, since said
calculation is needed in order to determine the transcoding factor for the content.*

Appellants respectfully submit that none of these alleged calculations pertain to the claimed

**transcoding operations** for the **stored** video stream. Indeed, in the context of the above-cited

paragraphs, the video stream has not even been stored yet. For at least this reason, Appellants

respectfully request that the rejection be overturned and claim 5 allowed.


**C.      Claims 8, 19, and 21 - 35 U.S.C. § 103(a) - *Artigalas, O'Donnel, Delpuch, Kaneko.***

As set forth above, *Artigalas* in view of *O'Donnel* and further in view of *Delpuch* fails to

disclose the features emphasized above for independent claim 1. *Kaneko* fails to remedy these

deficiencies. For at least the reason that *Artigalas* in view of *O'Donnel* and *Delpuch* and further in

view of *Kaneko* fails to disclose the features of claim 1, claims 8, 19, and 21 are allowable as a

matter of law. For at least this reason, Appellants respectfully request that the rejection to claims 8,

19, and 21 be overturned and the claims allowed.

Further, the final Office Action (page 17) alleges in part the following rationale for combining

*Artigalas* and *O'Donnel* and *Delpuch*:

Therefore, it would have been obvious to one of ordinary skill in the art at the time
the invention was made to modify Artigalas, O'Donnel and Delpuch by specifically
providing the elements mentioned above, as taught by Kaneko, for the purpose of
evaluating the resources needed in order to perform a transcoding operation based
on the resources a receiver device has to offer at a given point, allowing
transcoding to take place during idle times using the receiver's resources quite
effectively.

Appellants respectfully disagree. The combination as proposed by the final Office Action (page 17)

does not yield predictable results (nor is predictability alleged). For instance, *Artigalas* describes

magnetic tape recording methods (see, e.., paragraph [0035]) and digital video cassettes

[paragraph [0036]] as possible mechanisms for recording at local client devices. There is no

evidence that transcoding algorithms can even be applied to such technologies. In addition, as

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explained above, transcoding operations implemented in *Artigalas* fundamentally alter operations

of *Artigalas*, which is evidence of non-obviousness of the claims. Hence, Appellants respectfully

submit that the proposed combination is not obvious, and respectfully request that the rejection be

overturned for these additional reasons.

**D.      Claims 9, 17, 18, 56-60 - 35 U.S.C. § 103(a) - *Artigalas, O'Donnel, Delpuch, Masukura*.**

  1.  Dependent Claims 9, 17, and 18

   As set forth above, *Artigalas* in view of *O'Donnel* and further in view of *Delpuch* fails to

disclose the features emphasized above for independent claim 1. *Masukura* fails to remedy these

deficiencies. For at least the reason that *Artigalas* in view of *O'Donnel* and *Delpuch* and further in

view of *Masukura* fails to disclose the features of claim 1, claims 9, 17, and 18 are allowable as a

matter of law. For at least this reason, Appellants respectfully request that the rejection to claims 9,

17, and 18 be overturned and the claims allowed.

   In addition, Appellants respectfully submit that the combination of *Masukura* with *Artigalas,*

*O'Donnel*, and *Delpuch* is not obvious. For instance, with regard to claims 9, 17, and 18, the final

Office Action (pages 19-21) alleges in part the following:

> Therefore, it would have been obvious to one of ordinary skill in the art at the time
> the invention was made to modify Artigalas, O'Donnel and Delpuch by specifically
> providing the elements mentioned above, as taught by Musukura[sic], for the
> purpose of converting video from one format to another, allowing more compression
> and in consequence administrating storage space more effectively.

Appellants respectfully disagree. *Artigalas* is primarily concerned with, among other issues

addressed on page 1 of *Artigalas*, providing a large capacity, local reservoir of video/audio content

(see, e.g., paragraph [0006]) that provides "genuine on-demand video service in which he totally

controls the selection and display of the programs from his own video reservoir" (see, e.g.,

paragraph [0007]) while limiting "his expenditure on decoding" (see, e.g., paragraph [0009]).

*O'Donnel* and *Delpuch* are primarily concerned with increasing the effective capacity of local

storage (e.g., see paragraph [0007] in *O'Donnel* and paragraph [0011] of *Delpuch*). *Delpuch* additionally seeks to additionally improve the user's control of quality over what is stored there (see, e.g., paragraph [0011]). *Artigalas* never even mentions transcoding, and as explained above, it is not predictable that transcoding technology can be applied in *Artigalas* – indeed, it is not a mere, simple substitution, but rather, a fundamental change in operation. Both *O'Donnel* and *Delpuch* rely on "re-compression," and <u>not</u> trancoding based on different formats (e.g., standards/specifications). There is not even a suggestion in *O'Donnel* and *Delpuch* of implementing different formats for transcoding (e.g., MPEG-2, H.264).

Addressing the rationale from the final Office Action reproduced above, it is noted that *O'Donnel* emphasizes (see, e.g., paragraph [0007]) the desire by consumers for low cost devices as well as the unlikelihood of significant low computational capacity, hence it does not appear consistent with the contention that it is obvious to add the more sophisticated, format-converting compression technology allegedly taught in *Masukura* to *O'Donnel* and *Delpuch*, nor is it reasonable to allege so. Similarly, as mentioned above, *Artigalas* likewise desires to limit expenditure on decoding, which appears at odds with the sophistication of more advanced decoding technology.

*Masukura*, on the other hand, is focused on providing content to plural devices requiring different formats (paragraph [0008]). Indeed, *Masukura* appears to teach away from re-compression (re-encoding, as set forth in paragraphs [0009] – [0012]), and hence its inclusion in the proposed combination appears to be at odds with Federal case law, cited below (emphasis in original):

> A prior art reference must be considered in its entirety, i.e., as a <u>whole</u>, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)

> However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution

claimed.." *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)

For at least these reasons, Appellants respectfully submit that a *prima facie* case of obviousness is not established using *Masukura* in combination with *Artigalas*, *O'Donnel*, and *Delpuch*, and hence respectfully request that the rejection to claims 9, 17, and 18 be overturned and the claims allowed.

The final Office Action (pages 4-5) addresses, in rebuttal, the arguments against the combination of *O'Donnel* and *Delpuch* in view of *Masukura* as follows (reproduced in part, emphasis in original):

> *In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of O'Donnel, Delpuch in view of Kaneko. However, there is no requirement that a motivation to make the modification be expressly articulated in the references. The test for combining references in[sic] what the combination of disclosures <u>taken as a whole</u> would suggest to one of ordinary skill in the art; since, references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures...*

Appellants agree in part, and disagree in part. The last statement reproduced above appears to be contradictory, since if the disclosure is read as a whole, one is versed in the specifics of the disclosure. Otherwise, how would one gather what is being suggested? Further, Appellants reiterate that the contention is not that an expressly articulated motivation be found in the references, but that each disclosure <u>as a whole</u> should be taken into consideration. In other words, one having ordinary skill in the art should recognize based on the teachings of the references that a low-cost codec (conventional re-encoding) is being taught among the references, and assuming *arguendo* the concern is one of reducing storage space, *Artigalas* and *O'Donnel* place cost constraints on such efforts, which happens to be a countervailing concern to *Masukura*'s approach (which happens to teach away from the use of conventional re-encoding processes). Further, these teachings collectively should "raise a flag" as to why one having ordinary skill in the art would

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be motivated to combine *Masukura* with the other references. The final Office Action (page 5, italics in original) continues on this issue as follows:

> In this case, as admitted by the applicant *O'Donnel* and *Delpuch* deal with the recompression of content in order to reduce the space that a file would take in a storage device; nonetheless, the conversion of MPEG-2 to MPEG-4 of *Masukura* also yields the benefit of creating a smaller, more compressed file which takes less space in a storage device and provide[sic] compatibility with other devices (See paragraph [0005] of *O'Donnel*). Therefore, it would have been obvious to one of ordinary skill in the art to combine known techniques to improve a re-compression system for a predictable result of creating files which take less space in a storage device.

Appellants respectfully disagree. As explained above, the above-alleged motivation ignores cost concerns as taught in two of the references and appears to endorse the position that a selective approach is permissible when combining the teachings of the references (hence ignoring the teachings as a whole requirement). For instance, one having ordinary skill in the art may reasonably read *O'Donnel* and *Delpuch* and conclude that, as a whole, re-compression provides sufficient savings in storage space while reducing costs consistent with the teachings of two of these three references. The addition of *Masukura* is the anomaly, as it provides for more complex (and hence more expensive) transcoding schemes and even teaches away from conventional re-encoding schemes. Appellants respectfully submit that *Masukura* has more likely been combined through the benefit gleaned <u>exclusively</u> through Appellants' disclosure, and hence represents <u>impermissible</u> hindsight reasoning. For at least these additional reasons, Appellants respectfully request that the rejection of 9, 17, and 18 be overturned and the claims allowed.

### 3.    Dependent Claims 56-60

As set forth above, *Artigalas* in view of *O'Donnel* and further in view of *Delpuch* fails to disclose the features emphasized above for independent claim 1. *Masukura* fails to remedy these deficiencies. For at least the reason that *Artigalas* in view of *O'Donnel* and *Delpuch* and further in view of *Masukura* fails to disclose the features of claim 1, claims 56-60 are allowable as a matter of

law. For at least this reason, Appellants respectfully request that the rejection to claims 56-60 be

overturned and the claims allowed.


### (3)(a) Dependent Claim 56

In addition, with regard to claim 56, the final Office Action (page 21) alleges in part the

following (emphasis added):

> …it is noted that Artigalas fails to explicitly disclose that transcoding comprises
> compressing the first compressed video stream according to the second format at a
> reduced bit rate. Nevertheless, in a similar field of endeavor O'Donnel discloses
> that transcoding comprises compressing the first compressed video stream
> according to the second format at a reduced bit rate (Paragraphs [0019] [0018]; re-
> compress content at a lower bit rate implementing MPEG technology, i.e. MPEG-
> 2). Therefore, it would have been obvious to one of ordinary skill in the art at the
> time the invention was made to modify Artigalas by specifically providing the
> elements mentioned above, as taught by O'Donnel, for the purpose of allowing the
> receiver to be able to efficiently and <u>easily perform further compression without the
> need of high computational resources</u>.

Appellants respectfully disagree that the combination is obvious. As explained above, *Artigalas*

does not disclose, teach or suggest transcoding operations, and there is no evidence of such

capability nor a suggestion to add such functionality. Further, the addition of transcoding to the

system of *Artigalas* fundamentally alters the principle of operation of *Artigalas*, which is evidence of

non-obviousness as explained above. The rationale for the combination is also inconsistent with

the rationale for combining *Masukura*, as explained below.

The final Office Action further alleges in part (page 22, emphasis added):

> …it is noted that Artigalas, O'Donnel and Delpuch fail to explicitly disclose
> compressing a second compressed video stream according to a third format
> different than the first and second formats. Nevertheless, in a similar field of
> endeavor Masukura discloses compressing a second compressed video stream
> according to a third format different than the first and second formats (Paragraphs
> [0035] [0042]; converting <u>MPEG-2 to MPEG-4</u>). Therefore, it would have been
> obvious to one of ordinary skill in the art at the time the invention was made to
> modify Artigalas, O'Donnel and Delpuch by specifically providing the elements
> mentioned above, as taught by Musukura[sic], for the <u>purpose of converting video
> from one format to another, allowing more compression and in consequence
> administrating storage space more effectively</u>.

Appellants respectfully disagree that the combination is obvious. As noted above, the rationale for combining *Artigalas* with *O'Donnel* was allegedly to "perform further compression without the need of high computational resources." However, it would be readily recognized by one having ordinary skill in the art that the introduction of MPEG or H264 compression algorithms requires the need for higher computational codecs (and higher costs), in contradiction to the alleged motivation for combining *Artigalas* and *O'Donnel*. Further, as explained above, the introduction of higher complexity also is contrary to the explicit low-cost concerns of, for instance, *Artigalas* and *O'Donnel*, and as further evidenced indirectly by the low-complexity re-encoding algorithms of all but the *Masukura* reference, which teaches away from those methods (and *Artigalas*, which lacks any discussion of transcoding). For at least these reasons, Appellants respectfully request that the rejection be overturned and claim 56 allowed.

### (3)(b) Dependent Claim 57

With regard to claim 57, the final Office Action, in justifying the combination of *Artigalas* with *O'Donnel*, alleges the following in part (page 23):

> Therefore, it would have been obvious…to modify Artigalas by specifically providing the elements mentioned above, as taught by O'Donnel, for the purpose of implementing a compression technique which provides reasonable compression at a moderate computational complexity.

Appellants respectfully disagree that the combination is obvious. It is noted that claim 57 is described in the context of a transcoding operation. As explained above, *Artigalas* does not disclose, teach or suggest transcoding operations, and there is no evidence of such capability nor a suggestion to add such functionality. Further, the addition of transcoding to the system of *Artigalas* fundamentally alters the principle of operation of *Artigalas*, which is evidence of non-obviousness as explained above. For at least these reasons, Appellants respectfully request that the rejection be overturned and claim 57 allowed.

(3)(c) Dependent Claim 58

With regard to claim 58, the final Office Action (page 24) alleges in part the following:

…Nevertheless, in a similar field of endeavor Masukura discloses accessing a
portion of a video stream, decoding the portion, and converting the decoded portion
according to a third format different than the first and second formats (Paragraphs
[0008] [0088] [0089] figure 8; re-compressing portions of a video into MPEG-4
standard, different from an analog standard or a MPEG-2 standard), and storing the
transcoded portion having the third format in the storage device (Paragraph [0087]
figure 8; converted video storage 805). Therefore, it would have been obvious to
one of ordinary skill in the art at the time the invention was made to modify
Artigalas, O'Donnel and Delpuch by specifically providing the elements mentioned
above, as taught by Musukura[sic], for the purpose of implementing a standard
which provides significantly grater[sic] compression for parts of a video content.

Appellants respectfully disagree that the combination would be obvious. As explained above, for

instance, *Artigalas* would likely require a fundamental change (e.g., addition of transcoding

algorithms currently not present in *Artigalas*, and processing resources that would need to enable

compliance of such methods to magnetic tape or digital video cassettes). *Artigalas* and *O'Donnel*

describe cost constraints that are violated by pursuing a more complex approach to compression

technology found in *Masukura*. There is no evidence proffered that *Artigalas*, *O'Donnel*, and

*Delpuch* provide the ability to extract portions, and hence the addition of portion-extraction

technology of *Masukura*, assuming *arguendo* such technology is enabled in *Masukura*, is not a

mere substitution but a fundamental change in operations where incorporation with the teachings

of *Artigalas*, *O'Donnel*, and *Delpuch* is not explainable by the mere conclusion set forth in the final

Office Action of such a need (i.e., allegedly to implement a standard for compression parts). For at

least these reasons, Appellants respectfully request that the rejection be overturned and claim 58

allowed.

(3)(d) Dependent Claim 59

With regard to claim 59, the final Office Action (page 25) alleges that the combination of

*Artigalas*, *O'Donnel*, *Delpuch*, and *Masukura* is obvious. Appellants respectfully disagree. As

explained above, for instance, *Artigalas* would likely require a fundamental change (e.g., addition of

transcoding algorithms currently not present in *Artigalas*, and resources that would enable

compliance of such methods to magnetic tape or digital video cassettes). *Artigalas* and *O'Donnel*

describe cost constraints that are violated by pursuing a more complex approach to compression

technology found in *Masukura*. There is no evidence proffered that *Artigalas*, *O'Donnel*, and

*Delpuch* provide the ability to extract portions, and hence the addition of portion-extraction

technology of *Masukura*, assuming *arguendo* such technology is enabled in *Masukura*, is not a

mere substitution but a fundamental change in operations where incorporation with the teachings

of *Artigalas*, *O'Donnel*, and *Delpuch* is not predictable given the above noted unanswered

questions with regard to how *Artigalas* can be equipped to handle these technological advances,

and how *Artigalas* and *O'Donnel* can be cost competitive while implementing features not

previously suggested as a need nor equipped for such an alleged need. For at least these

reasons, Appellants respectfully request that the rejection be overturned and claim 59 allowed.


### (3)(e) Dependent Claim 60

The final Office Action (page 25) refers to the rejection of claim 57 as a basis for the

rationale in rejecting claim 60. With regard to claim 57, the final Office Action, in justifying the

combination of *Artigalas* with *O'Donnel*, alleges the following in part (page 23):

> Therefore, it would have been obvious...to modify Artigalas by specifically providing
> the elements mentioned above, as taught by O'Donnel, for the purpose of
> implementing a compression technique which provides reasonable compression at
> a moderate computational complexity.

Appellants respectfully disagree that the combination is obvious. It is noted that claim 60 is

described in the context of a transcoding operation. As explained above, *Artigalas* does not

disclose, teach or suggest transcoding operations, and there is no evidence of such capability nor

a suggestion to add such functionality. Further, the addition of transcoding to the system of

*Artigalas* fundamentally alters the principle of operation of *Artigalas*, which is evidence of non-

obviousness of the claim as explained above. For at least these reasons, Appellants respectfully

request that the rejection be overturned and claim 60 allowed.


**E.     Claim 22 - 35 U.S.C. § 103(a) - *Artigalas, O'Donnel, Delpuch, Kaars.*

As set forth above, *Artigalas* in view of *O'Donnel* in further view of *Delpuch*, fails to disclose

the emphasized features of independent claim 1. *Kaars* fails to remedy these deficiencies. For at

least the reason that *Artigalas*, *O'Donnel*, *Delpuch*, and *Kaars* fails to disclose the features of claim

1, claim 22 is allowable as a matter of law.

Further, claim 22 recites as follows:

22.     The method of claim 1, wherein **the determination is further based on
one or more characteristics of the video stream**.

Notwithstanding the patentability of claim 1, Appellants respectfully submit that *Artigalas* in view of

*O'Donnel*, in view of *Delpuch*, and in further view of *Kaars* fails to disclose, teach, or suggest at

least the above emphasized features of claim 22. The final Office Action (page 26) alleges in part

the following:

> …Nevertheless, in a similar field of endeavor Kaars discloses transcoding based on
> one or more characteristics of the video stream (Paragraphs [0005] [0025]).
> Therefore, it would have been obvious to one of ordinary skill in the art at the time
> the invention was made to modify Artigalas, O'Donnel and Delpuch by specifically
> providing the elements mentioned above, as taught by Kaars, for the purpose of
> allowing the receiver to be able to receive and support different types of signal
> inputs, regulating is operation based on said input signal.

Appellants respectfully disagree. Paragraphs [0005] and [0025] of *Kaars* are reproduced below as

follows (emphasis added):

> [0005] A new device that is emerging on the market is the digital video recorder
> (DVR), also known as a Personal Video Recorder (PVR). The PVR contains a
> digital storage device such as a hard disk drive similar to that found in a personal
> computer for storing digital data. The PVR receives an analog or digital signal. In
> the former situation the PVR can digitize, compress and store the resulting
> signal. In the latter situation the PVR can store the digital signal as received. At
> playback the PVR retrieves and outputs the signal to the output device that is

connected to it. The PVR also allows the user to pause, stop, fast-forward and rewind the signal, quite similar to the standard VCR.

[0025] Also shown in FIG. 1 are several output devices connected to the data output port 104. The devices shown are not meant to be inclusive of all actual devices connectable with the 20 system, nor are they system constraints. Shown connected are a television 120, a home network 130 connected to a personal computer (PC) 132 and PC 134, the Internet 140 also connected to a personal computer 142, and a generic hand-held playback device 150. It is well known to those skilled in the art that <u>the input signal for a television differs greatly from an input signal of a personal computer, each requiring different signal processing and format for output.</u> Another constraint of these output devices is their differing storage capacities. For example, a television generally has no storage capacity so the signal it receives is instantly played back. A PC might have the capacity to store several blocks of data representing several digital movies. And a hand-held playback device (which may require yet another signal format) might have storage capabilities for only one content information. In addition to compatibility constraints of the actual playback devices, a home network and the Internet also have inherent constraints such as bandwidth and capacity. For proper playback, the data must be in a format compatible with the particular playback device. Therefore, with the present invention, the user may utilize any of a number of these devices to render (typically, but not exclusively, audio and/or video content information) the same information.

Appellants respectfully submit that there is no determination whether encoded pictures are to be transcoded according to a first or second operating mode based on the characteristics of the video stream. Paragraph [0005] of *Kaars* appears to be directed to a single compression operation for an analog-sourced signal that is digitized and stored, in addition to the direct storage of a digital signal and then playback of the same. As to paragraph [0025], even assuming *arguendo* the input signal is recognized as different for different devices, hence requiring different signal processing, that is not the same as the determination of the transcoding mode for an encoded signal based on the characteristics of the signal. For at least this separate and additional reason, and to the extent the rejection of the above-emphasized features of claim 22 rely on *Kaars*, Appellants respectfully request that the rejection be overturned and claim 22 allowed.

**F.    Claim 23, 24, 41-44, and 47 - 35 U.S.C. § 103(a) - *O'Donnel, Delpuch.***

Claim 23 recites (with emphasis added):

23.    A set-top terminal (STT) comprising:
*an encoder configured to compress plural digitized pictures of a picture sequence according to a first video compression specification to produce a video stream*;
*determine logic configured to determine whether the video stream is to be transcoded according to a first operating mode or a second operating mode* relative to producing the video stream, the determination based on availability of processing resources; and
*transcode logic configured to transcode the video stream according to either the first operating mode or the second operating mode* responsive to a determination regarding the sufficiency of processing resources.

Appellants respectfully submit that *O'Donnel* in view of *Delpuch* fails to disclose, teach, or suggest at least the above-emphasized features of claim 23. The final Office Action (page 27) acknowledges that *O'Donnel* "fails to explicitly disclose an encoder configured to compress....to produce a video stream," but incorrectly equates the encoding function of a headend in *Delpuch* to that of one residing at a set-top terminal. It is noted claim 23 recites a set-top terminal with the above-emphasized features, not a headend. Since neither *O'Donnel* nor *Delpuch* disclose both a set-top terminal with an encoder to perform the first encoding function and transcode logic that, among other features, performs at least a second encoding function on the first encoded signal, Appellants respectfully submit that a *prima facie* rejection has not been established, and hence respectfully requests that the rejection be overturned and claim 23 allowed.

Further, it is noted that *O'Donnel* fails to disclose the features corresponding to first and second operating modes. The off-line and real-time features do not both pertain to transcoding, since real-time (when the signal is first received) does not involve a *transcode* operation in *O'Donnel*. For at least this additional and separate reason, Appellants respectfully request that the rejection be overturned and claim 23 allowed.

In addition, the final Office Action (page 3) provides in part the following in rebuttal (italics in original):

> However, the examiner respectfully disagrees with the applicant. Delpuch discloses that the received content is previously encoded by the headend (See paragraphs [0022] [0025]) where the receiver further compresses the received encoded content. In other words, the receiver performs further compression or data reduction to the incoming data stream in order to reduce the amount of storage required to store content, paragraph [0012]. As it is well known in the art, MPEG re-compression requires the implementation of an encoder as described on paragraph [0029] (See Pat. No 5,889,561 – Incorporated by reference in its entirety by Delpuch). Therefore, Delpuch clearly discloses "an encoder configured to compress plural digitized pictures of a picture sequence according to a first video compression specification to produce a video stream".

Appellants respectfully submit that there appears to be a disconnect in the understanding of the arguments pertaining to the issue for this rejection. Explaining further, as admitted by the Office, *Delpuch* discloses that the headend encodes the content, which is largely the focus of the argument. Claim 23 requires a first encoding performed at the STT, and then at least a second encoding (at the STT) of the first encoded signal via the transcoding operation. However, the final Office Action alleges above that the "*receiver performs further compression or data reduction to the incoming data stream*," and refers to paragraph [0012] to support that allegation. Appellants respectfully disagree with this characterization of *Delpuch*. Paragraph [0112] of *Delpuch* is reproduced below (emphasis added):

> [0012] Described herein are methods and apparatus for <u>compressing incoming video streams on an STB</u>. In one embodiment, a client-server distributed computing system is configured to enable the storage of more data within the client. In one embodiment, the client-server distributed computing system comprises an interactive television system wherein broadcast data is stored on a viewer's STB or PVR. One contemplated embodiment provides for <u>real time compression or data reduction by removing bits from the incoming data stream in order to reduce the amount of storage required to store associated content. Also contemplated is a background data reduction technique wherein the incoming data stream is first stored and then compressed (perhaps further compressed if already compressed)</u> at a later time to reduce storage requirements. Also contemplated is the ability for a viewer to control the quality of stored video or data in the viewer's PVR. Consequently, it may be possible to offer consumers the ability to record content associated with more data without requiring more storage space.

From the above underlined excerpts, the incoming stream may be encoded and stored - period - in one embodiment. In another embodiment, a signal (e.g., analog) is received at the storage device, then retrieved and compressed. In another embodiment (the parenthetical portion from above), the incoming signal is <u>already</u> compressed (as admitted by the Office to occur at the headend), stored, retrieved, and compressed again. However, in neither of these scenarios described above (or elsewhere in the specification of *Delpuch*) is the operation of the encoder <u>in the receiver</u> both encoding the data, retrieving, and then encoding again. To read otherwise is to read more into *Delpuch* than is explicitly disclosed. Further, even assuming MPEG re-compression requires the implementation of an encoder, that does not mean that the encoder performs the first compression on the incoming stream and then a second compression. For at least these reasons, Appellants respectfully submit that claim 23 is allowable over *O'Donnel* in view of *Delpuch*, and respectfully request that the rejection be overturned and claim 23 allowed.

For at least the reason independent claim 23 is allowable over *O'Donnel* in view of *Delpuch*, dependent claims 24, 41-44, and 47 are allowable as a matter of law. Accordingly, Appellants respectfully request that the rejection to claims 24, 41-44, and 47 be overturned and claims 24, 41-44, and 47 allowed.

Additionally, page 28 of the final Office Action alleges that "claims 43, 44 and 47 are rejected for the same reasons stated in claims 5, 7, and 12." However, Appellants respectfully submit that claims 5, 7, and 12 are rejected under a different grounds of rejection than claims 43, 44, and 47, and hence the rejection is improper. Hence, Appellants respectfully request that the rejection to claims 43, 44, and 47 be overturned and the claims allowed.

Further, with respect to claim 43, and to the extent that *O'Donnel* and *Delpuch* are relied on exclusively for the rejection of like-features found in claim 5, Appellants respectfully submit that *O'Donnel* and further in view of *Delpuch* fails to disclose, teach, or suggest at least "***access pre-calculated resource estimates*** corresponding to compressing, decompressing, or a combination of both tasks pertaining to ***transcoding operations*** corresponding to the ***stored***

video stream, the pre-calculated resource estimates based on worst case conditions for one or

more factors," as recited in claim 43. The final Office Action (page 7) refers to paragraphs

[0035] and [0037] and figure 6 of *Delpuch* for alleged teaching of these features, those

paragraphs of *Delpuch* reproduced below (emphasis added):

> [0035] Turning now to FIG. 6, one embodiment of a method corresponding to the above description is provided. Generally speaking, the processes described in FIG. 6 may occur within a viewer's STB, PVR, or related receiving device. In response to detecting an indication to record a particular television program or other data (decision block 602), a determination may be made as to the amount of storage required to accommodate storage of the program (block 604). It is noted that detection (block 602) of an indication to record a program may be in response to an explicit request received from a viewer, a pre-programmed request to record shows of a given type, or an automatic indication that may occur in response to detecting a program the viewer may wish to record based on the viewer's viewing habits, demographics, etc.

> [0037] Subsequent to determining the storage requirements (block 604), a determination may be made (decision block 606) as to a particular data reduction factor DRF (i.e., level of compression) desired. Such an indication may be made explicitly by the viewer (e.g., quality level highest, compression level greatest, etc.) or could by automatically determined based on factors such as the amount of storage space available, the type of program indicated, or otherwise. Alternatively, a default compression level may be utilized if no DRF indication is detected (decision block 606). Subsequent to determining the desired level of compression and corresponding storage space required, a determination is made (decision block 608) as to whether there is sufficient storage space available for the proposed recording. If there is sufficient space (decision block 608), then the program may be subsequently compressed (block 612) using the desired DRF and stored (block 614). It is noted that the desired compression which is indicated may be no compression, in which case compression processing at block 612 is simply bypassed.

Appellants respectfully submit that none of these sections disclose *access pre-calculated*

*resource estimates*, and in particular, certainly not for compressing, decompressing, or a

combination of both pertaining to *transcoding operations* for worst case conditions for the

*stored* video stream. The final Office Action (page 2) alleges in part the following (italics in

original):

> *However, the examiner respectfully disagrees with the applicant. Delpuch clearly discloses determining the amount of storage available and the amount of storage required to transcode a video content to its highest quality; paragraphs [0035] [0037] figure 6. More specifically, paragraph [0037] teaches that the level of*

*compression can be automatically determined based on predetermined factors
such as the amount of storage available; where the amount of storage available
can reasonably be interpreted as a resource estimate. Moreover, it is clear that
the storage available calculation is done prior to the transcoding step, since said
calculation is needed in order to determine the transcoding factor for the content.*

Appellants respectfully submit that none of these alleged calculations pertain to the claimed

**transcoding operations** for the **stored** video stream. Indeed, in the context of the above-cited

paragraphs, the video stream has not even been stored yet. For at least this reason, Appellants

respectfully request that the rejection be overturned and claim 43 allowed.


**G.     Claims 25, 46, 51, 52, and 63-67 - 35 U.S.C. § 103(a) - *O'Donnel, Delpuch, Masukura.***

    1.     Claims 25, 46, 51, 52, and 63-67

As set forth above, *O'Donnel* in view of *Delpuch* fails to disclose, teach, or suggest at least

the above-emphasized features of claim 23. *Masukura* fails to remedy these deficiencies. For at

least the reason that claim 23 is allowable over *O'Donnel* in view of *Delpuch* in further view of

*Masukura*, dependent claims 25, 46, 51, 52, and 63-67 are allowable as a matter of law and hence

Appellants respectfully request that the rejection be overturned and the claims allowed.

Further, it is noted that the amendments filed after the Notice of Appeal and acknowledged

as entered in the Advisory Action dated April 7, 2010 cause claims 63-67 to depend directly or

indirectly from claim 62 (as well as indirectly on claim 23). Claim 62 has been rejected under

*O'Donnel, Delpuch,* and *Artigalas,* whereas the heading for the rejection of claims 63-67 under the

current section (Section G) omits *Artigalas.* However, it is noted that the final Office Action (page

30) refers to the rejections of claims 56-60 for application to the current rejection, which includes

*O'Donnel, Delpuch, Artigalas,* and *Masukura.* Appellants will address the rejection to claims 63-67

below in the context of *O'Donnel, Delpuch, Artigalas,* and *Masukura.*

2.      Claims 25, 46, 51, and 52

With regard to the rejection of claims 25, 46, 51, and 52, Appellants respectfully submit that the proposed combination is not obvious, especially since there is an omission of necessary claim features. As set forth in the final Office Action (page 29), *O'Donnel* is used to allegedly teach the first and second transcoding operating modes. However, as explained in the prior section, *O'Donnel* does not teach two transcoding operating modes. Further, *Masukura* does not remedy this deficiency, especially since the emphasis appears to be on real-time processing (e.g., paragraph [0046], *Masukura*), with no evident disclosure of non-real time processing. For at least this additional reason, Appellants respectfully request that the rejection to claims 25, 46, 51, and 52 be withdrawn and the claims allowed.


3.      Claims 46, 51, and 52

With regard to claims 46, 51, and 52, the final Office Action (page 30) refers to the rejections of claims 9, 17, and 18 for application to the current rejection. Appellants respectfully submit that the rejection is improper, since one set of claims (46, 51, and 52) is rejected under *O'Donnel* in view of *Delpuch* in further view of *Masukura*, whereas the other set of claims (9, 17, and 18) is rejected under a different grounds of rejection (e.g., *Artigalas* in view of *O'Donnel* in view of *Delpuch* further in view of *Masukura*). Accordingly, Appellants respectfully request that the rejection be overturned and claims 46, 51, and 52 allowed.

To the extent that the rejection of claims 9, 17, and 18 rely exclusively on *O'Donnel* in view of *Delpuch* in further view of *Masukura*, Appellants address the rejection of claims 46, 51, and 52 in the context of the rejection levied for claims 9, 17, and 18. Appellants respectfully submit that the combination of *Masukura* with *O'Donnel* and *Delpuch* is not obvious. For instance, with regard to claims 9, 17, and 18, the final Office Action alleges (pages 19-21):

Therefore, it would have been obvious to one of ordinary skill in the art at the time
the invention was made to modify Artigalas, O'Donnel and Delpuch by specifically
providing the elements mentioned above, as taught by Musakura[sic], for the
purpose of converting video from one format to another, allowing more compression
and in consequence administrating storage space more effectively.

Appellants respectfully disagree. Ignoring *Artigalas* since it is not present in the current rejection,

*O'Donnel* and *Delpuch* are primarily concerned with increasing the effective capacity of local

storage (e.g., see paragraph [0007] in *O'Donnel* and paragraph [0011] of *Delpuch*). *Delpuch*

additionally seeks to additionally improve the user's control of quality over what is stored there

(see, e.g., paragraph [0011]). Both *O'Donnel* and *Delpuch* rely on "re-compression," and <u>not</u>

trancoding based on different formats (e.g., standards/specifications). There is not even a

suggestion in *O'Donnel* and *Delpuch* of implementing different formats for transcoding (e.g.,

MPEG-2, H.264). Addressing the rationale from the final Office Action reproduced above, it is

noted that *O'Donnel* emphasizes (see, e.g., paragraph [0007]) the desire by consumers for low

cost devices as well as the unlikelihood of significant low computational capacity, hence it does not

appear consistent with the contention that it is obvious to add the more sophisticated, format-

converting compression technology allegedly taught in *Masukura* to *O'Donnel* and *Delpuch*, nor is

it reasonable to allege so.

*Masukura*, on the other hand, is focused on providing content to plural devices requiring

different formats (paragraph [0008]). Indeed, *Masukura* appears to teach away from re-

compression (re-encoding, as set forth in paragraphs [0009] – [0012], and hence its inclusion in

the proposed combination appears to be at odds with Federal case law, cited below (emphasis in

original):

A prior art reference must be considered in its entirety, i.e., as a <u>whole</u>, including
portions that would lead away from the claimed invention. *W.L. Gore &
Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983),
*cert. denied*, 469 U.S. 851 (1984)

However, "the prior art's mere disclosure of more than one alternative does not
constitute a teaching away from any of these alternatives because such
disclosure does not criticize, discredit, or otherwise discourage the solution

claimed.." *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)

For at least these reasons, Appellants respectfully submit that a *prima facie* case of obviousness is not established using *Masukura* in combination with *O'Donnel*, and *Delpuch*, and hence respectfully request that the rejection to claims 46, 51, and 52 be overturned and the claims allowed.

The final Office Action (pages 4-5, emphasis in original) addresses, in rebuttal, the combination of *O'Donnel* and *Delpuch* in view of *Masukura* as follows (reproduced in part):

> *In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of O'Donnel, Delpuch in view of Kaneko. However, there is no requirement that a motivation to make the modification be expressly articulated in the references. The test for combining references in[sic] what the combination of disclosures* <u>*taken as a whole*</u> *would suggest to one of ordinary skill in the art; since, references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures...*

Appellants agree in part, and disagree in part. The last statement reproduced above appears to be contradictory, since if the disclosure is read as a whole, one is versed in the specifics of the disclosure. Otherwise, how would one gather what is being suggested? Further, Appellants reiterate that the contention is not that an expressly articulated motivation be found in the references, but that each disclosure (and the collective disclosures) <u>as a whole</u> should be taken into consideration. In other words, one having ordinary skill in the art should recognize based on the teachings of the references that a low-cost codec (conventional re-encoding) is being taught among the references, and assuming *arguendo* the concern is one of reducing storage space, *O'Donnel* places cost constraints on such efforts, which happens to be a countervailing concern to *Masukura*'s approach (which happens to teach away from the use of conventional re-encoding processes). Further, these teachings collectively should "raise a flag" as to why one having

ordinary skill in the art would be motivated to combine *Masukura* with the other references. The final Office Action (page 5) continues on this issue as follows:

> *In this case, as admitted by the applicant O'Donnel and Delpuch deal with the recompression of content in order to reduce the space that a file would take in a storage device; nonetheless, the conversion of MPEG-2 to MPEG-4 of Masukura also yields the benefit of creating a smaller, more compressed file which takes less space in a storage device and provide[sic] compatibility with other devices (See paragraph [0005] of O'Donnel). Therefore, it would have been obvious to one of ordinary skill in the art to combine known techniques to improve a re-compression system for a predictable result of creating files which take less space in a storage device.*

Appellants respectfully disagree. As explained above, the above-alleged motivation ignores cost concerns as explicitly taught in at least one of the references (and indirectly taught through use of low-computational complexity in two of the references) and appears to endorse the impermissable position that one skilled in the art may take a selective approach to combining the teachings of the references (and ignore the teachings as a whole requirement). For instance, one having ordinary skill in the art may read *O'Donnel* and *Delpuch* and reasonably conclude that re-compression provides sufficient savings in storage space while reducing costs consistent with the teachings of two of these three references. The addition of *Masukura* is the anomaly, as it provides for more complex (and hence more expensive) transcoding schemes and teaches away from conventional re-encoding schemes. Appellants respectfully submit that *Masukura* has more likely been combined through the benefit gleaned <u>exclusively</u> through Appellants' disclosure, and hence represents <u>impermissible</u> hindsight reasoning. For at least this additional reason, Appellants respectfully request that the rejection be overturned and claims 46, 51, and 52 be allowed.

4.   Claims 63-67

With regard to claims 63-67, the final Office Action (page 30) refers to the rejections of claims 56-60 for application to the current rejection. Section D levies a rejection under the combination of *O'Donnel*, *Delpuch*, *Artigalas*, and *Masukura*. Assuming the intent of this Section

(Section G) is to reject claims 63-67 under a similar grounds (to Section D) in view of the amendments (i.e., the omission in the change in the grounds of rejection to claims 63-67 in view of the post-Notice of Allowance amendments is inadvertent), Appellants address the rejection under Section G for claims 63-67 using the combination of *O'Donnel*, *Delpuch*, *Artigalas*, and *Masukura*. In short, Appellants respectfully submit that the combination fails to establish a *prima facie* case of obviousness. *Artigalas* is primarily concerned with, among other issues addressed on page 1 of *Artigalas*, providing a large capacity, local reservoir of video/audio content (see, e.g., paragraph [0006]) that provides "genuine on-demand video service in which he totally controls the selection and display of the programs from his own video reservoir" (see, e.g., paragraph [0007]) while limiting "his expenditure on decoding" (see, e.g., paragraph [0009]). *O'Donnel* and *Delpuch* are primarily concerned with increasing the effective capacity of local storage (e.g., see paragraph [0007] in *O'Donnel* and paragraph [0011] of *Delpuch*). *Delpuch* additionally seeks to additionally improve the user's control of quality over what is stored there (see, e.g., paragraph [0011]). *Artigalas* never even mentions transcoding, and as explained above, it is not predictable that transcoding technology can be applied in *Artigalas* – indeed, it is not a mere, simple substitution, but rather, a fundamental change in operation. Both *O'Donnel* and *Delpuch* rely on "re-compression," and not trancoding based on different formats (e.g., standards/specifications). There is not even a suggestion in *O'Donnel* and *Delpuch* of implementing different formats for transcoding (e.g., MPEG-2, H.264).

O'Donnel emphasizes (see, e.g., paragraph [0007]) the desire by consumers for low cost devices as well as the unlikelihood of significant low computational capacity, hence it does not appear consistent with the contention that it is obvious to add the more sophisticated, format-converting compression technology allegedly taught in *Masukura* to *O'Donnel* and *Delpuch*, nor is it reasonable to allege so. Similarly, as mentioned above, *Artigalas* likewise desires to limit expenditure on decoding, which appears at odds with the sophistication of more advanced decoding technology.

*Masukura*, on the other hand, is focused on providing content to plural devices requiring different formats (paragraph [0008]). Indeed, *Masukura* appears to teach away from re-compression (re-encoding, as set forth in paragraphs [0009] – [0012]), and hence its inclusion in the proposed combination appears to be at odds with Federal case law, cited below (emphasis in original):

> A prior art reference must be considered in its entirety, i.e., as a <u>whole</u>, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)

> However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed." *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

> It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)

For at least these reasons, Appellants respectfully submit that a *prima facie* case of obviousness is not established using *Masukura* in combination with *Artigalas*, *O'Donnel*, and *Delpuch*, and hence respectfully request that the rejection to claims 63-67 be overturned and the claims allowed.

The final Office Action (pages 4-5, in addressing the combination pertaining to Section D) addresses, in rebuttal, the arguments against the combination of *O'Donnel* and *Delpuch* in view of *Masukura* as follows (reproduced in part, emphasis in original):

> *In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of O'Donnel, Delpuch in view of Kaneko. However, there is no requirement that a motivation to make the modification be expressly articulated in the references. The test for combining references in[sic] what the combination of disclosures <u>taken as a whole</u> would suggest to one of ordinary skill in the art; since, references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures…*

Appellants agree in part, and disagree in part. The last statement reproduced above appears to be contradictory, since if the disclosure is read as a whole, one is versed in the specifics of the

disclosure. Otherwise, how would one gather what is being suggested? Further, Appellants reiterate that the contention is not that an expressly articulated motivation be found in the references, but that each disclosure <u>as a whole</u> should be taken into consideration. In other words, one having ordinary skill in the art should recognize based on the teachings of the references that a low-cost codec (conventional re-encoding) is being taught among the references, and assuming *arguendo* the concern is one of reducing storage space, *Artigalas* and *O'Donnel* place cost constraints on such efforts, which happens to be a countervailing concern to *Masukura*'s approach (which happens to teach away from the use of conventional re-encoding processes). Further, these teachings collectively should "raise a flag" as to why one having ordinary skill in the art would be motivated to combine *Masukura* with the other references. The final Office Action (page 5, italics in original, again in the context of Section D) continues on this issue as follows:

> *In this case, as admitted by the applicant O'Donnel and Delpuch deal with the recompression of content in order to reduce the space that a file would take in a storage device; nonetheless, the conversion of MPEG-2 to MPEG-4 of Masukura also yields the benefit of creating a smaller, more compressed file which takes less space in a storage device and provide[sic] compatibility with other devices (See paragraph [0005] of O'Donnel). Therefore, it would have been obvious to one of ordinary skill in the art to combine known techniques to improve a re-compression system for a predictable result of creating files which take less space in a storage device.*

Appellants respectfully disagree. As explained above, the above-alleged motivation (assuming *arguendo* similarly used in the present section G) ignores cost concerns as taught in two of the references and appears to endorse the position that a selective approach is permissible when combining the teachings of the references (hence ignoring the teachings as a whole requirement). For instance, one having ordinary skill in the art may reasonably read *O'Donnel* and *Delpuch* and conclude that, as a whole, re-compression provides sufficient savings in storage space while reducing costs consistent with the teachings of two of these three references. The addition of *Masukura* is the anomaly, as it provides for more complex (and hence more expensive) transcoding schemes and even teaches away from conventional re-encoding schemes. Appellants

respectfully submit that *Masukura* has more likely been combined through the benefit gleaned exclusively through Appellants' disclosure, and hence represents impermissible hindsight reasoning. For at least these additional reasons, Appellants respectfully request that the rejection of claims 63-67 be overturned and the claims allowed.

(4)(a) Dependent Claims 63 and 64

With regard to claim 63, the final Office Action (page 21) alleges in part the following (emphasis added):

> ...it is noted that Artigalas fails to explicitly disclose that transcoding comprises compressing the first compressed video stream according to the second format at a reduced bit rate. Nevertheless, in a similar field of endeavor O'Donnel discloses that transcoding comprises compressing the first compressed video stream according to the second format at a reduced bit rate (Paragraphs [0019] [0018]; re-compress content at a lower bit rate implementing MPEG technology, i.e. MPEG-2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Artigalas by specifically providing the elements mentioned above, as taught by O'Donnel, for the purpose of allowing the receiver to be able to efficiently and easily perform further compression without the need of high computational resources.

Appellants respectfully disagree that the combination is obvious. As indicated above, *Artigalas* never even mentions transcoding, and as explained above, it is not predictable that transcoding technology can be applied in *Artigalas* – indeed, it is not a mere, simple substitution, but rather, a fundamental change in operation. It would be readily recognized by one having ordinary skill in the art that the introduction of MPEG or H264 compression algorithms requires the need for higher computational codecs (and higher costs). Further, the introduction of higher complexity also is contrary to the explicit low-cost concerns of, for instance, *O'Donnel*, and as further evidenced indirectly by the low-complexity (less expensive) re-encoding algorithms of all but the *Masukura* reference, which teaches away from those methods. For at least these reasons, Appellants respectfully request that the rejection be overturned and claim 63 allowed.

For at least the reason that claim 63 is allowable, claim 64 is allowable as a matter of law and hence Appellants respectfully request that the rejection be overturned and claim 64 allowed.

(4)(b) Dependent Claim 65-67

With regard to claim 65, the final Office Action (page 24) alleges in part the following:

…Nevertheless, in a similar field of endeavor Masukura discloses accessing a portion of a video stream, decoding the portion, and converting the decoded portion according to a third format different than the first and second formats (Paragraphs [0008] [0088] [0089] figure 8; re-compressing portions of a video into MPEG-4 standard, different from an analog standard or a MPEG-2 standard), and storing the transcoded portion having the third format in the storage device (Paragraph [0087] figure 8; converted video storage 805). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Artigalas, O'Donnel and Delpuch by specifically providing the elements mentioned above, as taught by Musukura[sic], for the purpose of implementing a standard which provides significantly grater[sic] compression for parts of a video content.

Appellants respectfully disagree that the combination would be obvious. *Artigalas* never even mentions transcoding, and as explained above, it is not predictable that transcoding technology can be applied in *Artigalas* – indeed, it is not a mere, simple substitution, but rather, a fundamental change in operation. *O'Donnel* describes cost constraints that are violated by pursuing the more complex (more expensive) approach to compression technology found in *Masukura*. There is no evidence proffered that *O'Donnel* and *Delpuch* provide the ability to extract portions, and hence the addition of portion-extraction technology of *Masukura*, assuming *arguendo* such technology is enabled in *Masukura*, is not a mere substitution but a fundamental change in operations where incorporation with the teachings of *O'Donnel* and *Delpuch* is not explainable by the mere conclusion set forth in the final Office Action of such a need (i.e., implementing a standard for compression parts). For at least these reasons, Appellants respectfully request that the rejection be overturned and claim 65 allowed.

For at least the reason that claim 65 is allowable, Appellants respectfully submit that dependent claims 66 and 67 are allowable as a matter of law, and hence respectfully request that the rejection of claims 66 and 67 be overturned and the claims allowed.

**H.    Claims 45, 53, and 54 - 35 U.S.C. § 103(a) -** *O'Donnel, Delpuch, Kaneko.*

As set forth above, *O'Donnel* in view of *Delpuch* fails to disclose, teach, or suggest at least the above-emphasized features of claim 23. *Kaneko* fails to remedy all of these deficiencies. For at least the reason that claim 23 is allowable over *O'Donnel* in view of *Delpuch* in further view of *Kaneko*, dependent claims 45, 53, and 54 are allowable as a matter of law and hence Appellants respectfully request that the rejection be overturned and the claims allowed.

Further, the final Office Action (page 30) alleges that "claims 45, 53, and 54 are rejected for the same reasons stated in claims 8, 9, and 21, respectively." Appellants respectfully note that claims 8, 9, and 21 are rejected under *Artigalas* in view of *O'Donnel* in view of *Delpuch* further in view of *Kaneko*, whereas claims under the present section are rejected under a different grounds of rejection (*O'Donnel* in view of *Delpuch* in further view of *Kaneko*). Hence, the rejection is improper, and for at least this additional reason, Appellants respectfully request that the rejection be overturned and the claims allowed.

**I.    Claim 55 - 35 U.S.C. § 103(a) -** *O'Donnel, Delpuch, Kaars.*

As set forth above, *O'Donnel* in view of *Delpuch* fails to disclose the features emphasized above for independent claim 23. *Kaars* fails to remedy all of these deficiencies. For at least the reason that *O'Donnel* in view of *Delpuch* and further in view of *Kaars* fails to disclose the features of claim 23, claim 55 is allowable as a matter of law. Accordingly, Appellants respectfully request that the rejection be overturned and the claim allowed.

Further, the final Office Action (page 30) rejects claim 55 by alleging that "claim 55 is rejected for the same reasons stated in claim 22." However, claim 22 is rejected under a different

grounds of rejection (*Artigalas* in view of *O'Donnel* in view of *Delpuch* further in view of *Kaars*).

Appellants respectfully submit that the rejection is improper, and hence respectfully request that the

rejection be overturned and claim 55 allowed.

However, to the extent the rejection of claim 22 relies exclusively upon *O'Donnel* in view of

*Delpuch* further in view of *Kaars*, Appellants respectfully submit that *O'Donnel*, *Delpuch*, and *Kaars*

fails to disclose, teach, or suggest at least the features of claim 55. The final Office Action (page

26) alleges in part the following:

> ...Nevertheless, in a similar field of endeavor Kaars discloses transcoding based on
> one or more characteristics of the video stream (Paragraphs [0005] [0025]).
> Therefore, it would have been obvious to one of ordinary skill in the art at the time
> the invention was made to modify Artigalas, O'Donnel and Delpuch by specifically
> providing the elements mentioned above, as taught by Kaars, for the purpose of
> allowing the receiver to be able to receive and support different types of signal
> inputs, regulating is operation based on said input signal.

Appellants respectfully disagree. Paragraphs [0005] and [0025] of *Kaars* are reproduced below as

follows (emphasis added):

> [0005] A new device that is emerging on the market is the digital video recorder
> (DVR), also known as a Personal Video Recorder (PVR). The PVR contains a
> digital storage device such as a hard disk drive similar to that found in a personal
> computer for storing digital data. The PVR receives an analog or digital signal. In
> the former situation the PVR can digitize, compress and store the resulting
> signal. In the latter situation the PVR can store the digital signal as received. At
> playback the PVR retrieves and outputs the signal to the output device that is
> connected to it. The PVR also allows the user to pause, stop, fast-forward and
> rewind the signal, quite similar to the standard VCR.
>
> [0025] Also shown in FIG. 1 are several output devices connected to the data
> output port 104. The devices shown are not meant to be inclusive of all actual
> devices connectable with the 20 system, nor are they system constraints. Shown
> connected are a television 120, a home network 130 connected to a personal
> computer (PC) 132 and PC 134, the Internet 140 also connected to a personal
> computer 142, and a generic hand-held playback device 150. It is well known to
> those skilled in the art that <u>the input signal for a television differs greatly from an
> input signal of a personal computer, each requiring different signal processing
> and format for output</u>. Another constraint of these output devices are their differing
> storage capacities. For example, a television generally has no storage capacity
> so the signal it receives is instantly played back. A PC might have the capacity to
> store several blocks of data representing several digital movies. And a hand-held
> playback device (which may require yet another signal format) might have
> storage capabilities for only one content information. In addition to compatibility

constraints of the actual playback devices, a home network and the Internet also have inherent constraints such as bandwidth and capacity. For proper playback, the data must be in a format compatible with the particular playback device. Therefore, with the present invention, the user may utilize any of a number of these devices to render (typically, but not exclusively, audio and/or video content information) the same information.

Appellants respectfully submit that there is no determination whether encoded pictures are to be transcoded according to a first or second operating mode based on the characteristics of the video stream. Paragraph [0005] of *Kaars* appears to be directed to a single compression operation for an analog-sourced signal that is digitized and stored, in addition to the direct storage of a digital signal and then playback of the same. As to paragraph [0025], even assuming *arguendo* the input signal is recognized as different for different devices, hence requiring different signal processing, that is not the same as the determination of the transcoding mode for an encoded signal based on the characteristics of the signal. For at least this separate and additional reason, and to the extent the rejection of these claimed features relies on *Kaars*, Appellants respectfully request that the rejection be overturned and claim 55 allowed.

## J.  Claim 61 - 35 U.S.C. § 103(a) - *Artigalas, O'Donnel, Delpuch, Zimmerman.*

As set forth above, *Artigalas* in view of *O'Donnel* in further view of *Delpuch*, fails to disclose the features emphasized above for independent claim 1. *Zimmerman* fails to remedy these deficiencies. For at least the reason that *Artigalas* in view of *O'Donnel*, in view of *Delpuch*, and in further view of *Zimmerman* fails to disclose the features of claim 1, claim 61 is allowable as a matter of law, and hence Appellants respectfully request that the rejection be overturned and claim 61 allowed.

Further, for at least the reasons set forth in Section B above, Appellants respectfully submit that the combination of *Artigalas*, *O'Donnel*, and *Delpuch* is not obvious (and *Zimmerman* does not

remedy this deficiency), and hence respectfully request that the rejection be overturned for these additional reasons and the claim allowed.


**K.    Claim 62 - 35 U.S.C. § 103(a) - *O'Donnel, Delpuch, Artigalas.***

As set forth above, *O'Donnel* in view of *Delpuch* fails to disclose the features emphasized above for independent claim 23. *Artigalas* fails to remedy these deficiencies. For at least the reason that the combination of *O'Donnel*, *Delpuch*, and *Artigalas* fails to disclose, teach, or suggest the features of independent claim 23, claim 62 is allowable as a matter of law, and hence Appellants respectfully request that the rejection to claim 62 be overturned and the claim allowed.

In addition, Appellants respectfully submit that, notwithstanding the patentability of independent claim 23, claim 62 is allowable over *O'Donnel*, *Delpuch*, and *Artigalas* for at least the reason that *O'Donnel*, *Delpuch*, and *Artigalas* fail to disclose, teach, or suggest at least the below-emphasized features of claim 62. In other words, claim 62 recites as follows (emphasis added):

> 62.    The STT of claim 23, further comprising a multiplexer, wherein the encoder is further configured to:
> receive, in parallel to the plural digitized pictures, second plural digitized pictures of a second picture sequence and compressed pictures, the received pictures corresponding to a first format; and
> further ***compress, in parallel to the plural digitized pictures of the picture sequence, the second plural digitized pictures of the second picture sequence to produce, in association with the multiplexer, a transport stream comprising a multiplex of the video stream and the compressed second plural digitized pictures, the transport stream pictures corresponding to a second format different than the first***.

The final Office Action (page 32) alleges in part the following with regard to *Artigalas* (emphasis in original):

> …*Artigalas* discloses that the encoder (encoders)…and further compress, in parallel to the plural digitized pictures of the picture sequence, the second plural digitized pictures of the second picture sequence to produce, in association with the multiplexer (Paragraph [0040] and figure 1; converting analog signals into digital signals and then compressing and multiplexing received streams)…

Appellants respectfully disagree. Paragraph [0040] of *Artigalas* provides as follows (emphasis added):

> [0040] The device of the invention can be incorporated in a television decoder or in a television receiver. As shown in FIG. 1, the device of the invention includes <u>means of frequency selection 1 able to provide signals from one or more channels in parallel</u>, the channels being picked up by an antenna 2 in the case of an air or satellite broadcast or received via a cable network Said means of frequency selection 1 can includes one or more analog and/or digital 'tuners', in order <u>to provide several channels of programs in parallel</u>. The signals output by said means of frequency selection 1 are processed by means of digital encoding 3 which convert, if need be, the analog signals into digital signals and possibly assure the digital compression and/or multiplexing of the received signals. The encoded digital signals are then fed to the means of recording and reading 4 to be recorded on a large-capacity recording medium 4a. Means of control 5 along with a user interface module 6 (in the form of buttons integrated in the device or a remote controller) enable the user to control the means of frequency selection 1 and the means of recording and reading 4.

Assuming *arguendo* <u>parallel</u> signal provision to the means of digital encoding 3 of Figure 1 of *Artigalas*, that does not necessarily mean <u>parallel encoding</u>. For instance, one having ordinary skill in the art should understand that buffers may be utilized to stagger processing times and hence provide sequential encoding. There is no evidence presented in *Artigalas* that the <u>encoding</u> is implemented in <u>parallel</u>. For at least this reason, and to the extent *Artigalas* is relied upon for these claimed features, Appellants respectfully request that the rejection be overturned and claim 62 allowed.

In addition, the final Office Action (page 33) alleges that *Artigalas* discloses a **transport stream**, and refers to Figure 1, paragraph [0040] and further alleges "digitized and compressed format." Appellants respectfully disagree. A transport stream has a well-understood meaning in the industry, and comprises specific, standardized packet structure (e.g., see MPEG-2). Neither paragraph [0040] of *Artigalas* nor Figure 1 describes a transport stream consistent with Appellants' specification or with industry standards. For this additional reason, Appellants respectfully request that the rejection be overturned and claim 62 allowed.

Further, for similar reasons set forth in association with Section B, Appellants respectfully submit that the combination is not obvious, and hence respectfully request that the rejection be overturned and claim 62 allowed for these additional reasons.


**L.     Claim 68 - 35 U.S.C. § 103(a) - *O'Donnel, Delpuch, Zimmerman.***

As set forth above, *O'Donnel* in further view of *Delpuch* fails to disclose the features emphasized above for independent claim 23. *Zimmerman* fails to remedy these deficiencies. For at least the reason that *O'Donnel* in view of *Delpuch* and in further view of *Zimmerman* fails to disclose the features of claim 23, claim 68 is allowable as a matter of law, and hence Appellants respectfully request that the rejection be overturned and claim 68 allowed.

Further, it is noted that the amendments filed after the Notice of Appeal and acknowledged as entered in the Advisory Action dated April 7, 2010 cause claim 68 to depend from claim 62 (and indirectly on claim 23). Claim 62 has been rejected under *O'Donnel, Delpuch*, and *Artigalas*, whereas the heading for the rejection of claims 63-67 under the current section (Section G) omits *Artigalas*. However, it is noted that the final Office Action (page 33) refers to the rejections of claim 61 for application to the current rejection, which includes *O'Donnel, Delpuch, Artigalas*, and *Zimmerman*. Appellants will address the rejection to claim 68 below in the context of *O'Donnel, Delpuch, Artigalas*, and *Zimmerman*.

For at least the reasons set forth above in Section K, Appellants respectfully submit that *O'Donnel, Delpuch*, and *Artigalas* fail to disclose, teach, or suggest the features of claim 62. *Zimmerman* fails to remedy these deficiencies. Accordingly, for at least the reason that claim 62 is allowable over *O'Donnel, Delpuch, Artigalas*, and *Zimmerman*, claim 68 is allowable as a matter of law and hence Appellants respectfully submit that the rejection to claim 68 be overturned and the claim allowed.

**Conclusion**

For at least the reasons discussed above, Appellants respectfully request that the Examiner's final rejection of claims 1, 2, 5, 7-9, 12, 17-19, 21-25, 41-47, and 51-68 be overturned by the Board, and that the application be allowed to issue as a patent with pending claims 1, 2, 5, 7-9, 12, 17-19, 21-25, 41-47, and 51-68.

In addition to the claims listed in Section VIII (CLAIMS – APPENDIX), Section IX (EVIDENCE – APPENDIX) included herein indicates that there is no additional evidence relied upon by this brief. Section X (RELATED PROCEEDINGS – APPENDIX) included herein indicates that there are no related proceedings.

Respectfully submitted,

Date: April 19, 2010

By: _____/David Rodack/_____
**David Rodack, Reg. No. 47,034**

Merchant & Gould
P.O. Box 2903
Minneapolis, Minnesota 55402-9946
Telephone: 404.954.5049

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PATENT TRADEMARK OFFICE

### VIII.   CLAIMS – APPENDIX

1.    A method comprising the steps of:

receiving plural video streams corresponding to a first format and a second format
different than the first format;

encoding in parallel plural digitized pictures of a first picture sequence corresponding to
a first video stream of the plural received video streams and a second picture
sequence corresponding to a second video stream of the plural received video
streams to produce a transport stream comprising a multiplex of a corresponding
first compressed video stream and a second compressed video stream,
respectively, the first and second video streams having the first format and the
first and second compressed video streams having the second format;

storing the transport stream in a storage device;

determining whether the encoded pictures of the first and second compressed video
streams are to be transcoded according to a first operating mode or a second
operating mode relative to producing the video stream, the determination based
on availability of processing resources, wherein the first operating mode is
implemented in non-real time and the second operating mode is implemented in
real-time; and

transcoding at least a portion of the first compressed video stream or the second
compressed video stream according to either the first operating mode or the
second operating mode responsive to a determination regarding the sufficiency
of processing resources.


2.    The method of claim 1, wherein the method is implemented by a television set-top

terminal.

5.      The method of claim 1, further comprising the steps of:

accessing pre-calculated resource estimates corresponding to compressing,

decompressing, or a combination of both tasks pertaining to transcoding

operations corresponding to the stored video stream, the pre-calculated resource

estimates based on worst case conditions for one or more factors,

wherein the transcoding according to the first operating mode is in non-real time and the

transcoding according to the second operating mode is in real time, the

determination of which mode to execute further based on the availability of

resources as determined with respect to the pre-calculated resources.


7.      The method of claim 5, wherein the one or more factors includes one or more of video

compression specification, picture size, picture rate, or time factor.


8.      The method of claim 7, wherein the time factor provides a plurality of completion times

for non-real time operations.


9.      The method of claim 1, wherein the transcoding according to the first operating mode is

implemented according to a second video specification different than the first video

specification.


12.      The method of claim 1, wherein the processing resources comprise one or more of an

instruction execution resource, bus bandwidth, memory capacity, storage capacity, or access to

storage capacity.

17.    The method of claim 1, wherein the transcoding according to the second operating mode is according to the first video specification.

18.    The method of claim 1, wherein the first operating mode corresponds to a first bit rate and the second operating mode corresponds to a second bit rate different than the first bit rate.

19.    The method of claim 1, further comprising the step of:

monitoring consumption of the processing resources over an extended time period for different time intervals for respective operations that are currently executing and scheduled to be executed at a future time.

21.    The method of claim 19, wherein the step of monitoring consumption of the processing resources comprises monitoring user input.

22.    The method of claim 1, wherein the determination is further based on one or more characteristics of the video stream.

23.    A set-top terminal (STT) comprising:

an encoder configured to compress plural digitized pictures of a picture sequence according to a first video compression specification to produce a video stream;

determine logic configured to determine whether the video stream is to be transcoded according to a first operating mode or a second operating mode relative to producing the video stream, the determination based on availability of processing resources; and

transcode logic configured to transcode the video stream according to either the first

operating mode or the second operating mode responsive to a determination

regarding the sufficiency of processing resources.

24. The STT of claim 23, wherein the first operating mode corresponds to a higher
compression rate than the second operating mode.

25. The STT of claim 23, wherein the second operating mode corresponds to an MPEG-2
video compression specification and the first operating mode corresponds to an H.264 video
compression specification.

41. The STT of claim 23, wherein the STT is integrated in a subscriber television system.

42. The STT of claim 23, wherein the first operating mode is implemented in non-real time
and the second operating mode is implemented in real-time.

43. The STT of claim 23, wherein the determine logic is further configured to:

access pre-calculated resource estimates corresponding to compressing,

decompressing, or a combination of both tasks pertaining to transcoding

operations corresponding to the stored video stream, the pre-calculated resource

estimates based on worst case conditions for one or more factors,

wherein the transcode logic is further configured to transcode according to the first

operating mode in non-real time and according to the second operating mode in

real time, the determination of which operating mode to execute further based on

the availability of resources as determined with respect to the pre-calculated

resources.

44.     The STT of claim 43, wherein the one or more factors includes one or more of video compression specification, picture size, picture rate, or time factor.

45.     The STT of claim 44, wherein the time factor provides a plurality of completion times for non-real time operations.

46.     The STT of claim 23, wherein the transcode logic is further configured to transcode according to the first operating mode implemented according to a second video specification different than the first video specification.

47.     The STT of claim 23, wherein the processing resources comprise one or more of an instruction execution resource, bus bandwidth, memory capacity, storage capacity, or access to storage capacity.

51.     The STT of claim 23, wherein the second operating mode is according to the first video specification.

52.     The STT of claim 23, wherein the first operating mode corresponds to a first bit rate and the second operating mode corresponds to a second bit rate different than the first bit rate.

53.     The STT of claim 23, wherein the determine logic is further configured to:
        monitor consumption of the processing resources over an extended time period for
                different time intervals for respective operations that are currently executing and
                scheduled to be executed at a future time.

54.    The STT of claim 53, wherein the monitoring comprises monitoring user input.

55.    The STT of claim 23, wherein the determination is further based on one or more characteristics of the video stream.

56.    The method of claim 1, wherein transcoding comprises accessing in parallel the first and second compressed video streams, decompressing in parallel the encoded pictures of the first and second compressed video streams, and compressing the first compressed video stream according to the second format at a reduced bit rate and compressing the second compressed video stream according to a third format different than the first and second formats.

57.    The method of claim 56, wherein the first format corresponds to analog video, and the second and third formats correspond to different video compression specifications.

58.    The method of claim 1, wherein transcoding comprises accessing the portion of the first compressed video stream, decompressing the portion, and compressing the decompressed portion according to a third format different than the first and second formats, and storing the transcoded portion having the third format in the storage device.

59.    The method of claim 58, further comprising accessing and decompressing the transcoded portion and non-transcoded portions of the first compressed video stream and presenting as decompressed pictures for display.

60.    The method of claim 58, wherein the first format corresponds to analog video, and the second and third formats correspond to different video compression specifications.

61.     The method of claim 1, wherein encoding further comprising encoding audio corresponding respectively to the first and second video streams and multiplexing the encoded audio in the transport stream.

62.     The STT of claim 23, further comprising a multiplexer, wherein the encoder is further configured to:

receive, in parallel to the plural digitized pictures, second plural digitized pictures of a second picture sequence and compressed pictures, the received pictures corresponding to a first format; and

further compress, in parallel to the plural digitized pictures of the picture sequence, the second plural digitized pictures of the second picture sequence to produce, in association with the multiplexer, a transport stream comprising a multiplex of the video stream and the compressed second plural digitized pictures, the transport stream pictures corresponding to a second format different than the first.

63.     The STT of claim 62, wherein the transcode logic is further configured to access in parallel the video streams of the transport stream, decompress in parallel the compressed plural digitized pictures of the video stream and the compressed second plural digitized pictures, and compress the decompressed pictures of the video stream according to the second format at a reduced bit rate and compress the decompressed second plural digitized pictures according to a third format different than the first and second formats.

64.     The STT of claim 63, wherein the first format corresponds to analog video, and the second and third formats correspond to different video compression specifications.

65.     The STT of claim 62, wherein the transcode logic is further configured to access a portion of the video stream, decompress the portion, compress the decompressed portion according to a fourth format different than the first and second formats, and store the transcoded portion having the fourth format in a storage device, the transcoded portion comprising the compressed, decompressed portion.

66.     The STT of claim 65, further comprising accessing and decompressing the transcoded portion and non-transcoded portions of the video stream and present as decompressed pictures for display.

67.     The STT of claim 65, wherein the first format corresponds to analog video, and the second and fourth formats correspond to different video compression specifications.

68.     The STT of claim 62, wherein the encoder is further configured to compress audio corresponding respectively to the video streams of the transport stream, and wherein the multiplexer is configured to multiplex the compressed audio in the transport stream.

## IX.    EVIDENCE – APPENDIX

None.

## X.    RELATED PROCEEDINGS – APPENDIX

None.